

## Review of the genus *Scalarignathia* Capuše, 1973 (Lepidoptera, Sesiidae) from the Far East of Russia

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**Abstract** A new species, *Scalarignathia ussuriensis* n. sp., is described and figured. *S. kaszabi* Capuše, 1973 is added to the sesiid fauna of Russia for the first time. A redescription of the male and the first description of the female of the latter species are given. The female genitalia of the genus are described and figured for the first time as well.

**Key words** Sesiidae, *Scalarignathia*, *S. kaszabi*, *S. ussuriensis* n. sp., taxonomy, South Siberia.

The genus *Scalarignathia* was described by Capuše (1973) based upon two not perfect males deriving from the Hangai Mts, Mongolia. The reason for the erection of this new genus was the presence in the constituent species, habitually resembling to the species of the genus *Bembecia* (*Dipsosphesia* Spuler, 1910 sensu Capuše), of a well-developed and functional proboscis and a different shape of the crista gnathi of the male genitalia. In a recent paper devoted to the systematics and synonyms of the palearctic Sesiidae (Spatenka *et al.*, 1993), we recorded four species of the genus (see below). However, all these species have hitherto been known by the type specimens only. In addition, the male genitalia have been studied only in two species: *S. kaszabi* Capuše, 1973 and *S. coreacola* (Matsumura, 1931) (Capuše, 1973; Arita, 1991).

In the course of our work devoted the east palaeartic Sesiidae, we have come across a few highly interesting specimens deriving from South Siberia and the Far East of Russia, both males and females belonging to two species of *Scalarignathia*. One of them, including the females, was determined as *Scalarignathia kaszabi* Capuše, 1973, and the other as a new species. Since the type specimens of *S. kaszabi* (two males) are in poor condition, we redescribe this species here, too. Moreover, we give the first description of its female, including the female genitalia. In addition, *S. kaszabi* is recorded in the sesiid fauna of Russia for the first time. So at present the genus *Scalarignathia* in the region concerned includes two species, viz. *S. kaszabi* Capuše, 1973 and *S. ussuriensis* n. sp.

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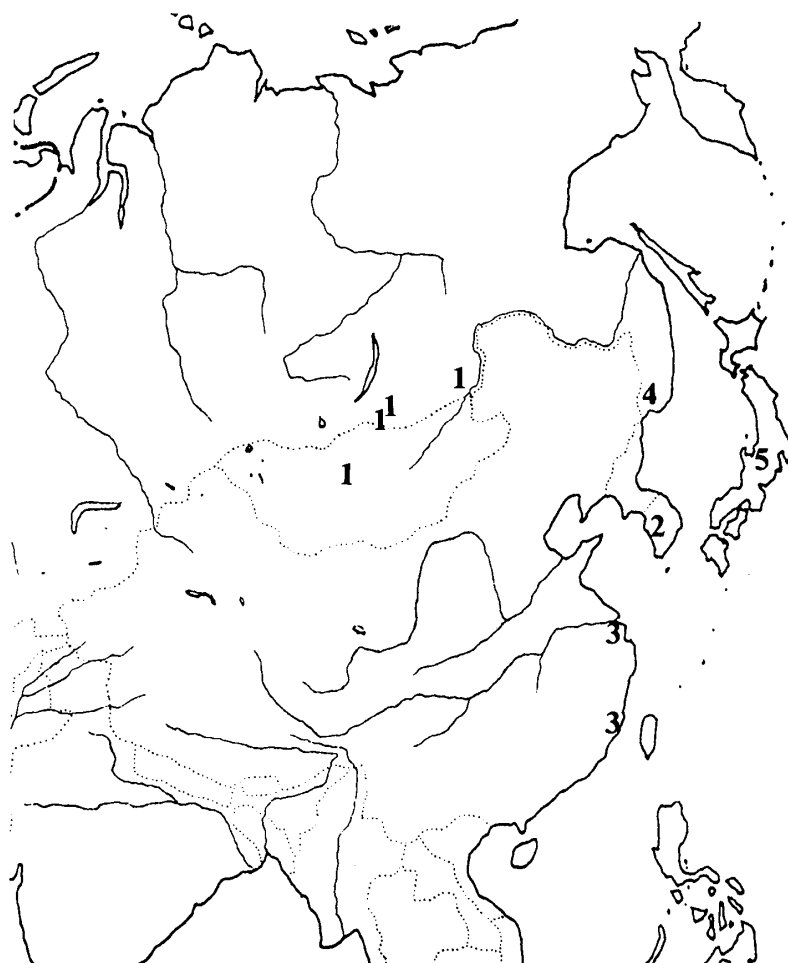


Fig. 1. Distribution map of *Scalarignathia* species. 1. *S. kaszabi* Capuše, 1973. 2. *S. coreacola* (Matsumura, 1931). 3. *S. sinensis* (Hampson, 1919). 4. *S. ussuriensis* n. sp. 5. *S. montis* (Leech, 1889).

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### Genus *Scalarignathia* Capuše

*Scalarignathia* Capuše, 1973: 112.

Type species: *Scalarignathia kaszabi* Capuše, 1973 (original designation); Heppner & Duckworth, 1981: 37; Spatenka *et al.*, 1993: 101.

Middle size clearwing moths with alar expanse 22.0–27.0 mm. Habitually similar to species of the genus *Bembecia* Hübner, [1819]. Proboscis well-developed, functional; veins  $R_1$  and  $R_2$  of forewing parallel; discal spot of forewing often with orange or yellow scales distally. Male genitalia: scopula androconialis well-developed but short; gnathos multiple, divided into 5 oval crista; crista sacculi pocket-shaped with a row of strong and pointed setae; aedeagus as long as valva; vesica with numerous small cornuti. Female genitalia: posterior apophysis longer than anterior apophysis; ostium bursae relatively narrow, slightly sclerotized; antrum somewhat longer than anterior apophysis, narrow, slightly sclerotized; corpus bursae globose or ovoid, without signum.

Diagnosis. This genus is closest to *Bembecia* Hübner, [1819], but it can be distinguished

by the presence of a well-developed functional proboscis and by a multiple shape of the gnathos of the male genitalia (simple in *Bembecia*).

**Constitution.** The genus contains five species, viz. *S. kaszabi* Capuše, 1973, *S. coreacola* (Matsumura, 1931), *S. sinensis* (Hampson, 1919), *S. ussuriensis* n. sp., and *S. montis* (Leech, 1889). However, the taxonomical position of the last species is unclear at the present, because only a single specimen is known, and the male genitalia have not been studied.

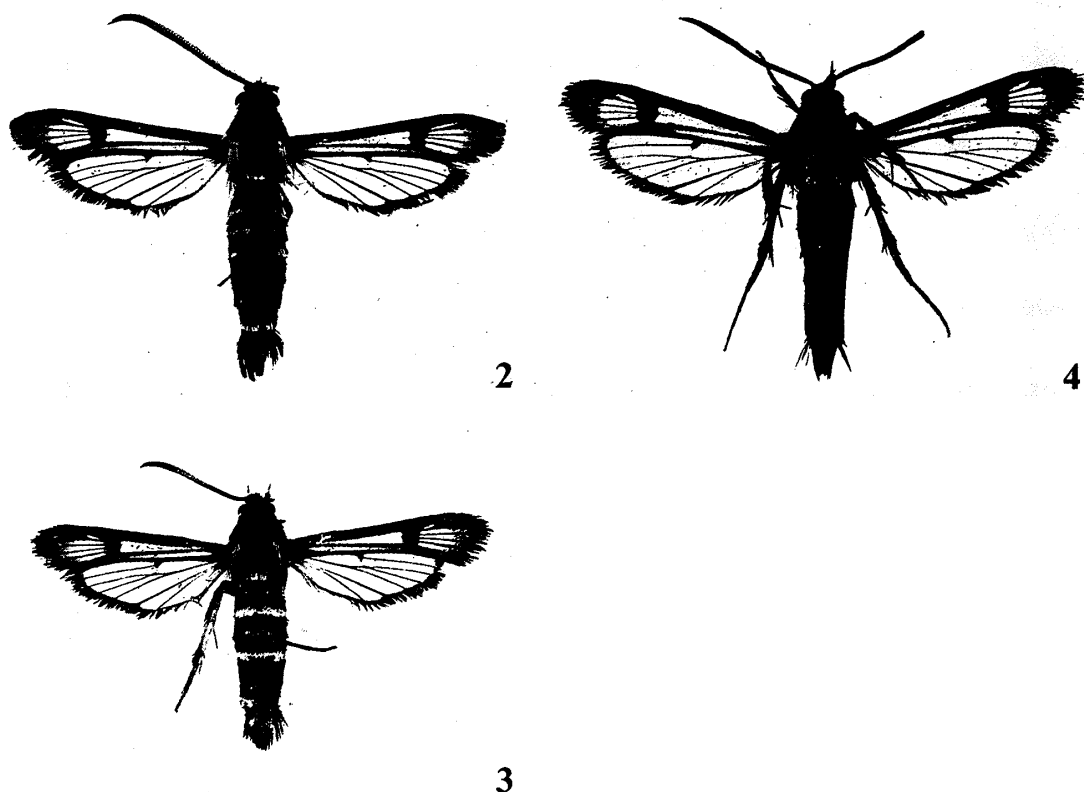
**Distribution** (Fig. 1). Known from the eastern part of the palaearctic region from central Mongolia in the west, across South Siberia (Transbaikalia), East China (Shanghai) and Korea to Japan (Honshu) in the east.

### *Scalarignathia kaszabi* Capuše (Figs 2-3, 5-9)

*Scalarignathia kaszabi* Capuše, 1973: 114, fig. 2, A-E, fig. 8, C-D (not E-F [sic !]). Type locality: Mongolia, Arkhangai Aimak, Hangai Mts, 8 km W Urdtamir Somon. Holotype male in the collection of Természettudományi Múzeum, Budapest, Hungary; Heppner & Duckworth, 1981: 37; Spatenka *et al.*, 1993: 101.

**Description.** Male (Fig. 2). Alar expanse 22.0-23.5 mm; body length 12.0-14.0 mm; forewing 10.0-10.7 mm; antenna 7.0-7.5 mm. Head: antenna black apically, with a narrow, distally broadened yellow-orange line extero-laterally; frons yellow with admixture of blackish-brown scales medially; vertex black with a few yellow scales behind; labial palpus yellow with a narrow black stripe extero-laterally; pericephalic hairs yellow dorsally and pale yellow to white laterally. Thorax: patagial collar black with greenish-violet sheen dorsally and yellow laterally; tegula black with bronze-violet sheen, with a large, pale yellow to white, axillar spot, and a broad yellow internal margin; mesothorax black with bronze-violet sheen; metathorax black with a small yellow spot medially; besides that, tegula, meso- and metathoraces covered with yellow hair-like scales; thorax laterally black with violet sheen, with admixture of individual yellow scales. Legs: fore coxa yellow with a short but broad black stripe internally at base; hind tibia yellow with a narrow black ring both basally and near base of apical spurs; spurs pale yellow to yellow. Abdomen: black with violet sheen; tergites 1, 2, 3, 4, 6 and 7 each with a narrow yellow margin distally; sternites 2, 3, 4, 5 and 6 each with a narrow yellow stripe distally; besides, sternites 2, 3, 4 and 5 densely covered with pale yellow scales; anal tuft yellow medially and black with narrow external margin laterally. Forewing: costal margin brown to dark brown with a very narrow, yellow, longitudinal line; Cu-stem dark brown; anal margin brown with admixture of individual yellow-orange scales; apical area relatively narrow, brown, densely covered by yellow scales between veins  $R_5$ - $Cu_1$ ; veins  $M_1$  and  $M_2$  within external transparent area brown mixed with yellow-orange, vein  $M_3$  dark brown; discal spot about as narrow as apical area, brown to dark brown, with a small yellow-orange spot distally; transparent areas well-developed, covered with hyaline scales; external transparent area divided into 5 cells, about 2.5 times as broad as discal spot; cilia dark brown with a few yellow scales. Hindwing: transparent; veins and a very narrow outer margin dark brown to black (vein  $M_2$  mixed with yellow); discal spot triangular, reaching midway between vein  $M_2$  and common stem of veins  $M_3$ - $Cu_1$ , black with a narrow, yellow, distal margin; cilia dark brown mixed with yellow.

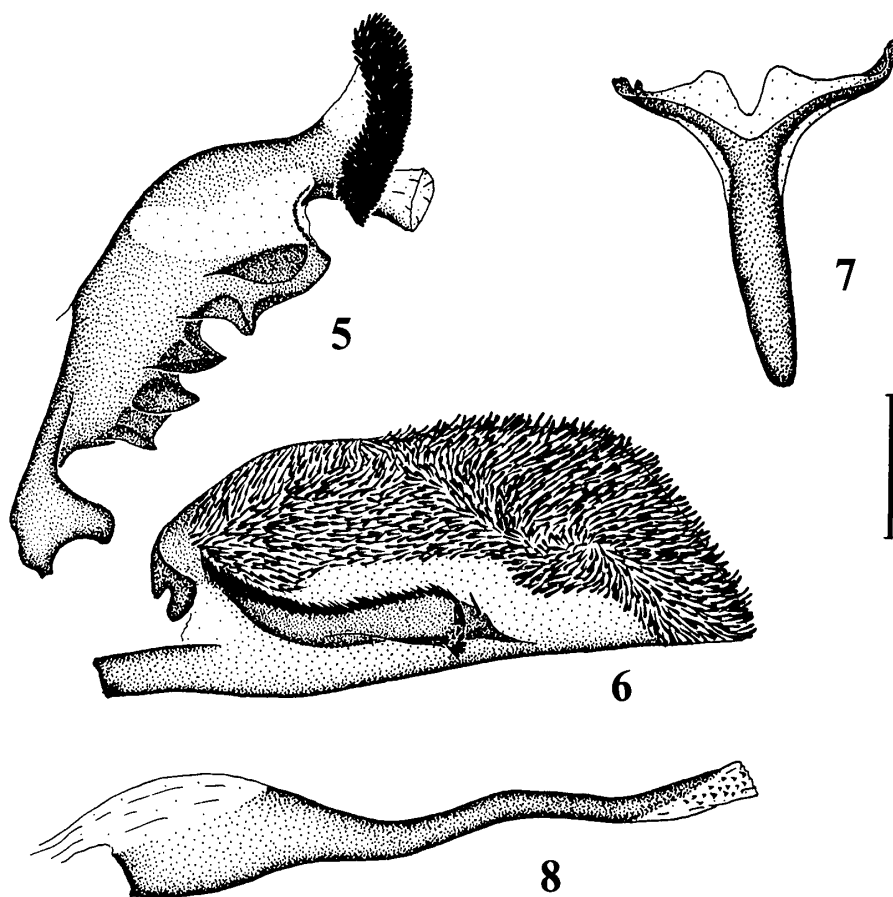
**Male genitalia** (Figs 5-8) (genital preparation No. GA-002). Tegumen-uncus complex (Fig. 5) relatively narrow, scopula androconialis well-developed but short; gnathos multiple, divided into 5 oval crista; valva trapeziform; crista sacculi pocket-shaped with a row of



Figs 2-4. *Scalarignathia* spp. 2. *S. kaszabi* Capuše, 1973, ♂, Russia, South Siberia, Buryatia, Kyakhta, 29. VII. 1977, Ler leg. (IBPV). Alar expanse 23.5 mm. 3. *S. kaszabi* Capuše, 1973, ♀, Russia, South Siberia, Buryatia, Kyakhta, 29. VII. 1977, Ler leg. (IBPV). Alar expanse 24.5 mm. 4. *S. ussuriensis* n. sp., holotype, ♀. Alar expanse 26.5 mm.

strong and pointed setae at dorsal margin, subapically with a row of flat-topped setae extending from dorsal margin towards ventral one (Fig. 6); vinculum about 1.5 times as short as saccus (Fig. 7); aedeagus (Fig. 8) thin, twice slightly curved, about as long as valva; vesica with numerous small cornuti.

Female (Fig. 3). Somewhat robuster than male. Alar expanse 22.5-24.5 mm; body length 13.0-14.0 mm; forewing 10.5-11.0 mm; antenna 6.5-7.0 mm. Head: antennna orange-yellow with a black apex; frons and labial palpus yellow; vertex black mixed with yellow-orange; pericephalic hairs dark yellow dorsally and pale yellow laterally. Thorax: patagial collar black with greenish-violet sheen dorsally and yellow laterally; tegula black with bronze-violet sheen, with a large, pale yellow to white, axillar spot, and a broad yellow internal margin; mesothorax black with bronze-violet sheen; metathorax black with a narrow, yellow, distal margin; besides that, tegula, meso- and metathoraces covered with yellow hair-like scales; thorax laterally black with violet sheen, with admixture of individual yellow scales. Legs: fore coxa yellow externally and black internally; hind tibia orange externally and pale yellow internally; spurs yellow-orange. Abdomen: black with greenish-violet sheen; tergites 2, 4 and 6 each with a narrow, pale yellow, distal margin; tergites 1 and 3 with a few pale yellow scales distally; sternites 4-6 with a few yellow scales at distal margin laterally; anal tuft black mixed with yellow-orange medially. Forewing: costal margin brown with a very narrow, orange, longitudi-



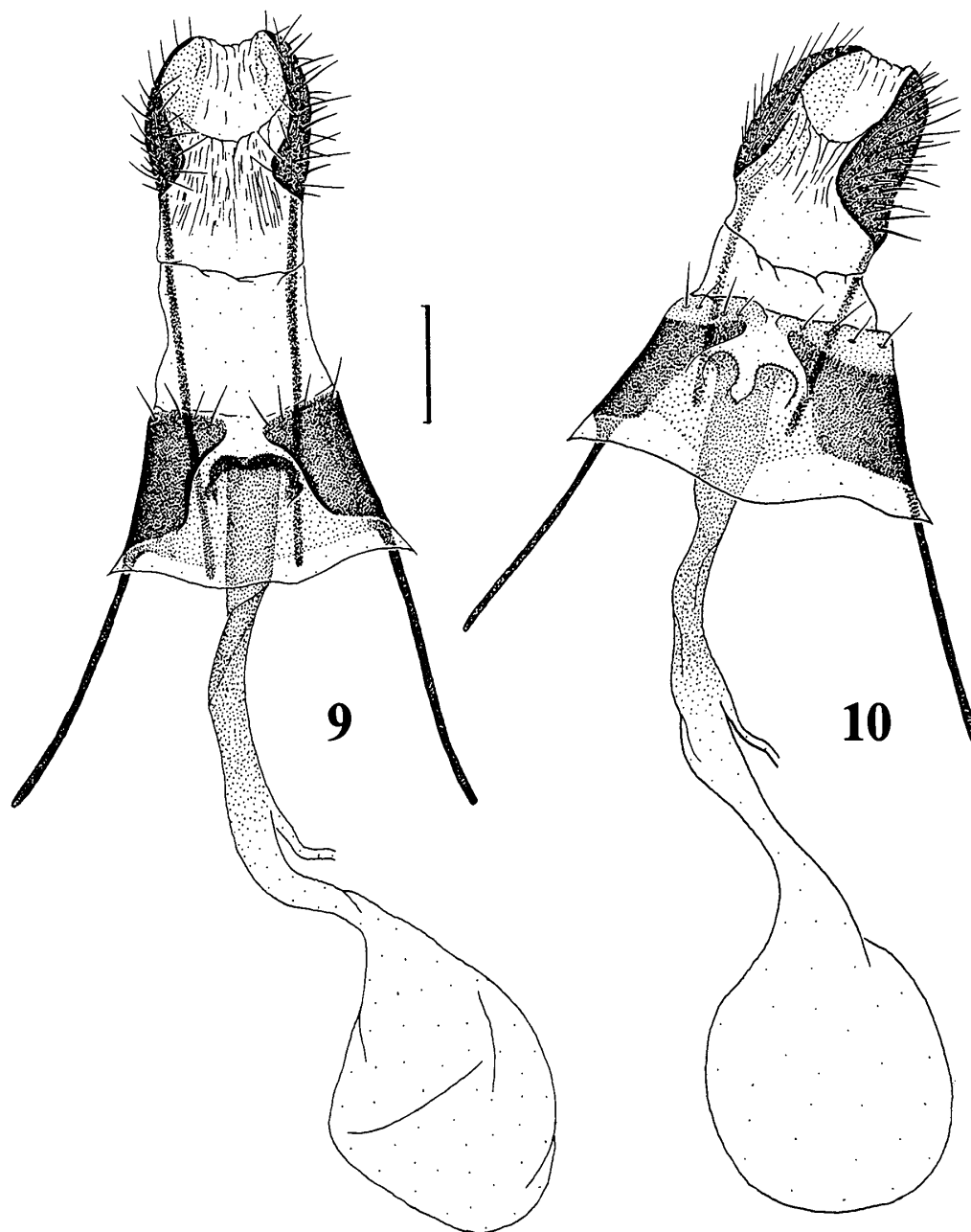
Figs 5-8. Male genitalia of *Scalarignathia kaszabi* Capuše, 1973 (genital preparation No. GA-002). 5. Tegumen-uncus complex. 6. Valva. 7. Saccus. 8. Aedeagus. Scale bar: 0.5 mm.

nal line; Cu-stem brown with a few orange scales; anal margin orange proximally and brown with orange distally; apical area relatively narrow, brown, densely covered with orange scales between veins  $R_5$ - $Cu_1$ ; veins  $M_1$  and  $M_2$  within external transparent area orange with a few brown scales, vein  $M_3$  brown; discal spot about 1.5 times as narrow as apical area, orange with a few brown scales proximally; transparent areas well-developed, covered with hyaline scales; external transparent area divided into 5 cells, about twice as broad as discal spot; cilia dark brown with a few yellow scales. Hindwing: transparent; veins and a very narrow outer margin black; discal spot triangular, reaching midway between vein  $M_2$  and common stem of veins  $M_3$ - $Cu_1$ , black with admixture of individual orange scales distally; cilia black, and orange in tornus.

Female genitalia (Fig. 9) (genital preparation No. GA-001). Eighth tergite well-sclerotized; posterior apophysis about 1.3 times as long as anterior apophysis; ostium bursae narrow, slightly sclerotized; antrum narrow, slightly sclerotized, somewhat longer than anterior apophysis; corpus bursae membranous, ovoid to globose, without signum.

Variability. Slightly varying in the individual size: alar expanse 22.0-24.5 mm; body length 12.0-14.0 mm; forewing 10.0-11.0 mm; antenna 7.0-7.5 mm, and in the number of scales, yellow in the males and orange in the females, on the forewing.

Diagnosis. Habitually, *S. kaszabi* is very similar to the west palaearctic *Bembecia ich-*



Figs 9-10. Female genitalia of *Sclarignathia* spp. 9. *S. kaszabi* Capuše, 1973 (genital preparation No. GA-001). Scale bar: 0.5 mm. 10. *S. ussuriensis* n. sp. (genital preparation No. GA-003). Scale bar: 0.5 mm.

*neumoniformis* ([Dennis et Schiffermüller], 1775), but can be easily distinguished from it, as well as from all *Bembecia*, by the well-developed and functional proboscis and by the multiple shape of gnathos in the male genitalia. From *S. sinensis* (Hampson, 1919), this species differs in the coloration of the antenna (black with a large pale yellow to white subapical spot in the species compared), discal spot of the forewing (ochreous-orange in *S. sinensis*), the presence of the pale yellow to white axillar spot on the tegula (absent in *S. sinensis*), and in the coloration of the abdomen (each tergite in the male and tergites 2, 4 and 6 in the female with a narrow, yellow distal margin in the species compared). From *S. coreacola* (Matsumura, 1931), *S. kaszabi* can be distinguished by the brown colour of the

cell between veins  $R_4$ - $R_5$  of the forewing (orange in *S. coreacola*) and by the coloration of the abdomen (each tergite with a narrow, ochreous, distal margin in the species compared).

Biology. The host plant is unknown. The moths are on wing from the middle to end of July.

Habitat. Unknown.

Material examined: 1 ♂ 1 ♀, Russia, South Siberia, Buryatia, Kyakhta, 29. VII. 1977, Ler leg., (IBPV); 2 ♂, Russia, South Siberia, Tchita Area, Alexandrovski Zavod, Gazimur River, 16. VII. 1977, Lelei leg. (genitalia examined in one male, preparation No. GA-002) (IBPV); 1 ♀, Russia, South Siberia, Buryatia, Mukhor-Shibir District, 29. VII. 1993, S. Zakharov leg. (genital preparation No. GA-001) (ZMBN).

Distribution (Fig. 1). Mongolia; Russia: South Siberia, Buryatia, Tchita Area. New to the Russian sesiid fauna.

***Scalarignathia ussuriensis* n. sp.** (Figs 4, 10)

Description. Female (holotype) (Fig. 4). Alar expanse 26.5 mm; body length 16.0 mm; forewing 12.0 mm; antenna 7.0 mm. Head: antenna brownish-grey with a black apex; frons grey; scales of vertex brownish-grey with paler tip; labial palpus brownish-grey with a somewhat darker 3rd joint; pericephalic hairs brown. Thorax: dorsally completely brown to dark brown with grey hue; tegula without axillar spot; thorax laterally grey with silvery sheen. Legs: fore coxa brownish-grey with silvery sheen; hind tibia light brown to brown with a few orange scales near base of medial spurs dorsally; spurs brownish-grey. Abdomen: dorsally completely brownish-grey with blue-violet sheen; ventrally somewhat paler; anal tuft brownish-grey. Forewing: costal and anal margins, Cu-stem, apical area and veins within external transparent area brown to dark brown; discal spot somewhat darker, about 0.67 times as broad as apical area; transparent areas well-developed, covered with hyaline scales with greyish hue; external transparent area divided into 5 cells, about 1.7 times as broad as discal spot; cilia dark brown. Hindwing: transparent; veins and a very narrow outer margin dark brown; discal spot black with blue sheen, triangular, reaching midway between vein  $M_2$  and common stem of veins  $M_3$ - $Cu_1$ ; cilia dark brown.

Female genitalia (Fig. 10) (paratype, genital preparation No. GA-003). Eighth tergite well-sclerotized; posterior apophysis about 1.5 times as long as anterior apophysis; ostium bursae narrow, slightly sclerotized, with a clear ventral cut; antrum narrow, somewhat longer than anterior apophysis, slightly sclerotized; corpus bursae membranous, globose to ovoid, without signum.

Male. Unknown.

Variability. Virtually no size variation. The only female paratype, although not in such good condition, has a yellow-orange labial palpus, yellow pericephalic hairs, a very narrow, yellow, external margin of the forecoxa, a little more numerous orange scales on the hind tibia, and not so numerous orange scales on the apical area between veins and on the discal spot distally of the forewing. Thus, this new species is possibly represented by two different colour forms.

Diagnosis. The dark form of this new species is very similar to some specimens of *Bembecia ninae* (Sheljuzhko, 1935), but clearly differs from it in the genitalic characters.

From other congeners, *S. ussuriensis* n. sp. can be easily separated by the completely brown to dark brown abdomen dorsally (with a coloured distal margin on the tergites in other *Scalarignathia*). The female genitalia are clearly distinguishable from those of *S. kaszabi* by the shape of the ostium bursae.

Biology. The host plant is unknown. The type series has been collected in the beginning of September.

Habitat. Unknown.

Material examined: Holotype ♀, Far East of Russia, Maritime Prov. [=Primorie], Novogeorgievka, 1. IX. 1983, Lelei leg. (ZMMU). Paratype. 1 ♀, same locality and date, Lelei leg. (genital preparation No. GA-003) (ZMMU).

Distribution (Fig. 1). Far East of Russia: Maritime Prov., Novogeorgievka.

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## 摘 要

極東ロシアの属 *Scalarignathia* Capuše, 1973 の再検討 (鱗翅目, スカシバガ科) (Oleg G. Gorbunov・有田 豊)

*Scalarignathia* 属は Capuše (1973) によりモンゴルから得られた不完全な 2 ♂ により創設された小さな属である。今までに、モンゴルと極東アジアから *S. kaszabi* Capuše, *S. coreacola* (Matsumura), *S. sinensis* (Hampson) の 3 種と日本から *S. montis* (Leech) 1 種の合計 4 種がそれぞれ少数のタイプ標本のみで記録されているにすぎない。本報告では、新種 *S. ussuriensis* と *S. kaszabi* Capuše を極東ロシアから記録した。

*Scalarignathia kaszabi* Capuše, 1973 (Figs. 2-3, 5-9)

本種はモンゴリアから記載されていたが、今回ロシアから初めて記録された。原記載は不完全な ♂ によるものなので、改めて ♂ ♀ ゲニタリアを含めて再記載した。また、この属の ♀ のゲニタリアの図示、記載は初めてである。

*Scalarignathia ussuriensis* n. sp. (Figs 4, 10)

極東ロシアの沿海州から得られた新種で、2 ♀ により記載した。本種は、外見的には別属の *Bembecia ninae* (Sheljuzhko, 1935) に似ている。*Scalarignathia* 属の他の種とは本種の腹部の背面が完全に褐色であることから区別される。

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